## Space Weather Forecast

Issued on Saturday, 20 January 2024 at 01:12 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

**Space Weather Forecast Headline: Chance of isolated Moderate-class flares.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Low with only a few minor common class flares observed. There are currently ten sunspot regions on the visible disc with the most notable region in the northeast. This is the largest on the disc, with a number of intermediate spots becoming evident as this moves into clearer viewing angle, however this maintains a simple bipolar structure. The next most interesting region is on the southeast disc, as this developed fairly rapidly near another sunspot group on 19 Jan. However this remains a simple region, with development having now slowed. The other regions are either small, or mature stable spots.

No Earth-directed coronal mass ejections (CMEs) were observed.

**Solar Wind / Geomagnetic Activity:** Solar winds eased from slightly elevated levels to near background, likely due to the declining influence of a very weak coronal hole fast wind. Speeds eased from around 450 km/s to just over 400 km/s. Interplanetary magnetic field (IMF) eased from peak Moderate values to be Weak from 19/1200 UTC. The north-south component was mainly weak and variable. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) persisted at background with no solar radiation storms occurring.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Low activity is expected to continue, with a chance of isolated Moderate class flares.

**Solar Wind / Geomagnetic Activity:** There are no Earth directed CMEs. The next coronal hole sourced fast wind enhancement is likely to be later day 1 or early day 2 (20-21 Jan), with slightly elevated solar winds expected. Geomagnetic activity is expected to be mainly Quiet, but likely increasing to give a spell of Unsettled with a chance of isolated Active intervals later day 1 or day 2 due to the fast wind onset.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 5 | 5 | 1 | 1 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 30 | 30 | 35 | 40 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 2 | 2 | 2 | 2 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

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